TK3-2 Calibration Instrument

Accurate monitor calibration

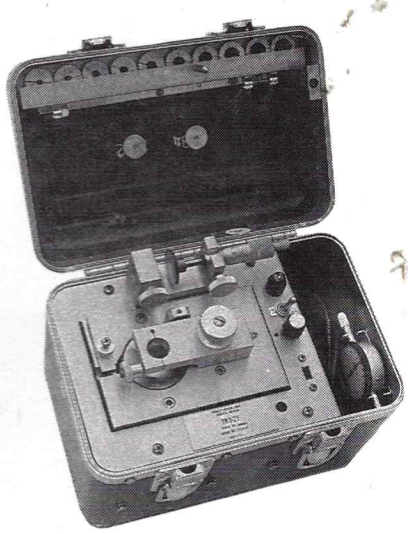
The TK3-2 Calibration Instrument simulates vibration and position for calibrating your Bently Nevada monitors. It verifies the operating condition of the monitor readouts as well as the condition of the proximity transducer system. A properly calibrated system means that the monitor readings and transducer inputs are accurate.

A spindle micrometer is used to check the transducer system and position monitor calibration. A probe mounting adapter provided with the TK3-2 holds the probe while the target is moved toward or away from the probe tip in calibrated increments. The Proximitor's® output is recorded using a voltmeter.

This technique enables you to verify that your transducer system is in good operating condition by comparing a user-generated curve with published specifications. The transducer system and micrometer can then be used to verify the thrust monitor display readings.

Vibration monitors are calibrated using the motor-driven wobble plate. A swing-arm holder is located over the wobble plate to hold the proximity probe in place. The holder and probe are adjusted to a position where the desired amount of mechanical vibration is found. The vibration is then measured using a dial micrometer which is supplied with the unit (no oscilloscope is needed).

A vibration monitor's reading can then be compared to the known mechanical vibration signal input. The mechanical vibration signal input to the TK3-2 can range from 2 to 10 mils (50 to 254 μm) peak-to-peak.



TK3-2 Calibration Instrument

Specifications

INPUTS

Power:

Electric: 95-125 Vac, 50/60 Hz, 1 A minimum. 190-250 Vac, 50/60 Hz, 1 A minimum.

Air: 90 psi (6.2 bar) maximum.

Wobulator Range:

Vibration Amplitude Range: 2 to 10 mils (50 μm to 254 μm) peak-to-peak.

Maximum Speed:

Electric: 0 to 10,000 cpm ±2,500 cpm.

Air: 0 to 5,000 cpm ±1,000 cpm.

Spindle Micrometer Range: 0-1000 mils (0-25.4 mm).

Target Button and Wobble Plate: AISI 4140 Alloy Steel. ①

PHYSICAL

Size:

Height: 8.5 inches (215 mm).

Width: 7.25 inches (184 mm).

Length: 11.25 inches (285 mm).

Weight: 13 lbs. (5.9 kg).

Ordering Information

TK3-2 Calibration Instrument

Electric Driven

14700 - A□□

Option Description

A □□	Scale Units
01	English
02	Metric

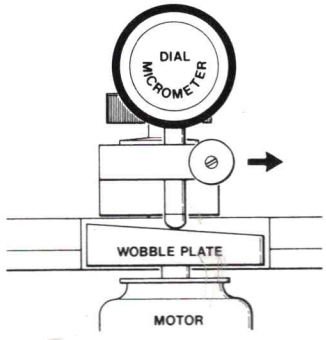
Air Driven

14680 - A□□

Option Description

A □□	Scale Units
01	English
02	Metric

① *Contact your nearest Bently Nevada sales representative for details on special target and wobble plate materials.*



BENTLY NEVADA®
P.O. BOX 157 • MINDEN, NEVADA USA 89423 • (702) 782-3611
TELEX: 7400983 BNC UC • FAX: (702) 782-9253

Proximitor®/Interface Module Housings

Protection from adverse environmental conditions

Proximitors and interface modules located on the machine deck need physical protection from work activities in the area and also from hostile environments. Although Proximitors and interface modules are rugged by design, these units and their electrical connections should be secured and protected when placed near rotating machinery. Also, explosion-proof housings may be necessary for electrical equipment placed in hazardous areas.

Bently Nevada offers three types of housings to protect Proximitors and Interface Modules from adverse environmental conditions. Explosion-proof, water-resistant and water and corrosion-resistant units are available.

Explosion-proof housing

The explosion-proof housing is designed for use in environments classified as hazardous areas. Constructed of copper-free aluminum that contains less than 0.4 percent of copper, the housing has increased resistance to corrosion.

When properly installed, the explosion-proof housing is designed for use in the following Division 1 and 2 areas: Class I Group D; Class II Groups E, F, G; and Class III.

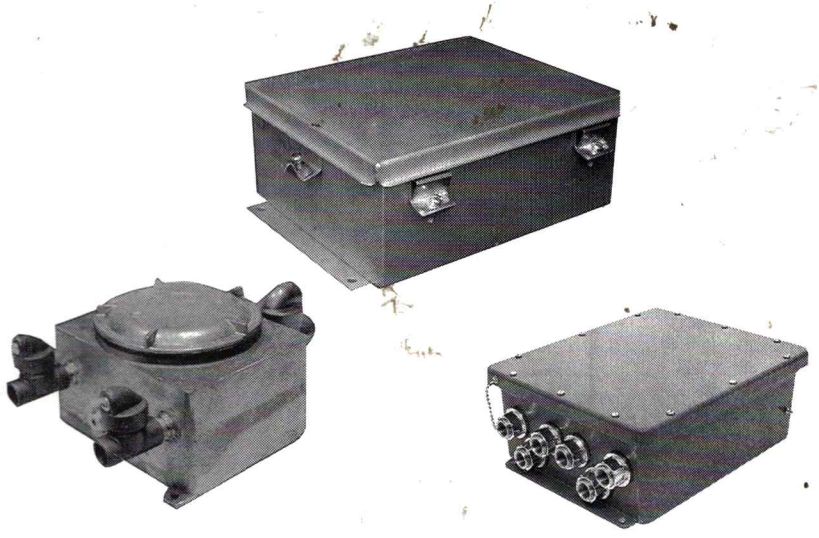
The housing is ordered according to the types of fittings required and the number of Proximitors that will be enclosed by the unit. Models are available for 2, 4 and 6 Proximitors, Interface Modules or Velocity-to-displacement Converters.

Each housing can be ordered with non-conductive mounting plates to electrically isolate the Proximitors and Interface Modules from the housings.

Water-resistant housing

To protect Proximitors, Interface Modules and Velocity-to-displacement Converters from damage caused by moisture, three water-resistant housings are offered.

The housings are constructed of 304L stainless steel and are designed to meet NEMA 4 specifications when properly installed.



Proximitor® /Interface Module Housings: Explosion-proof (left), water-resistant (upper right), water and corrosion-resistant (lower right).

Housings are ordered according to the types of fittings required and the number of Proximitors, Interface Modules or Velocity-to-displacement Converters that will be protected by the unit. Models are available for 2, 4 and 6 Proximitors, Interface Modules or Velocity-to-displacement Converters.

Each housing can be ordered with non-conductive mounting plates to electrically isolate the Proximitors and Interface Modules or Velocity-to-displacement Converters from the housings.

Water and corrosion-resistant housing

Constructed of fiberglass, the water and corrosion-resistant housing protects Proximitors and Interface Modules from corrosive and wet environments. When properly installed, the fiberglass-constructed housings are designed for outdoor environments because of their resistance to water, dust, corrosion and sleet.

The housings are ordered according to the types of fittings required and the number of Proximitors, Interface Modules or Velocity-to-displacement Converters that will be protected by the unit. Models are available for 2, 4 and 6 Proximitors, Interface Modules or Velocity-to-displacement Converters (VDCs).

Transducer type options now available for all three housings

Proximitor®/Interface Module Housings have a new option (A) that allows you to order transducer mounting hardware. The **transducer type option** includes mounting screws and optional isolation plates to correctly mount and isolate your Proximitors or Interface Modules.

BENTLY NEVADA®

P.O. BOX 157 • MINDEN, NEVADA USA 89423 • (702) 782-3611

TELEX: 7400983 BNC UC • FAX: (702) 782-9253

Transducer Accessories

Accessories for a reliable transducer system

Installing proximity probes during outages usually requires one or more mounting accessories to help simplify the task. Shown below is a typical internal mounting arrangement where various transducer hardware accessories are used for an XY proximity probe application.

Use of these parts allows you to quickly and efficiently install proximity probes and route associated cabling out of the machine case. Also, they help shield the exiting cables from electrical noise and adverse environmental conditions. Having proper probe mounting hardware on-site during the installation saves time and money for those responsible for the project.

Junction boxes

Junction boxes are normally mounted on or near the exterior of a machine case and allow electrical connections to be enclosed in weatherproof or explosion-proof environments.

Sealtite® flexible conduit

Flexible conduit is routinely used to route proximity probe cables safely to the Proximitor® housing and then back to the monitors. It protects transducer wiring from damage caused by splashing liquids or accidental contact with other equipment.

Sealtite® flexible conduit consists of a galvanized steel core with an extruded thermoplastic cover. Pipe fittings are made of steel with a zinc-plated, chromate finish. They are compatible with fittings found on Bently Nevada watertight equipment enclosures.

Probe mounting bracket

The 3567 Probe Mounting Bracket is used when internal mounting of proximity probes is desired. The bracket permits gapping of the probe the proper distance from the observed surface and locking it in place. It is designed for use with 3300 and 7200 Series proximity probes.

Low pressure cable seal

The 43501 Low Pressure Cable Seal is used to exit up to four 75 and/or 95 ohm (3300 and 7200 cables) transducer cables through a single hole in a machine case or other barrier.

Constructed of 303 stainless steel and a molded silicone rubber grommet, the cable seal prevents leakage of fluids along the outer jacket of the cable. The seal is threaded on both ends and fits into a tapped hole on the machine case or barrier. External pipe threads enable the seal to be mated to conduit or housings.

The Low Pressure Cable Seal must be used with non-armored cables. It is designed to seal up to 25 psi (1.75 bar) when properly installed.

For XY proximity probe mounting, the 43501-02-04-02 low pressure cable seal shown below allows proximity probe cables to easily exit the machine case.

Adapter

The optional 4190 Adapter is used to attach a junction box to the machine case. It also allows mounting of the proximity probe in some instances. The adapter is available in five thread configurations. Special adapters in many other configurations can be ordered.

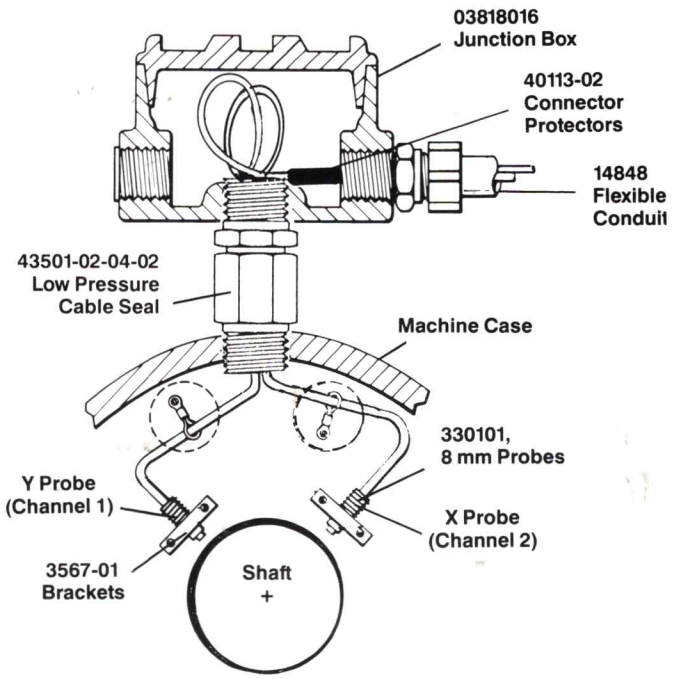
Cable seal

The optional 10076 Cable Seal is used mainly in cable routing applications. It restrains the coaxial cable from movement, prevents abrasion and provides splash protection. One end of the seal is provided with a 1/4-inch NPT thread which allows it to be threaded into a 4190-36 Adapter.

The aluminum seal is provided with an oil-resistant, slit grommet that allows it to be installed over armored or non-armored cable without removing connectors.

Explosion-proof fittings

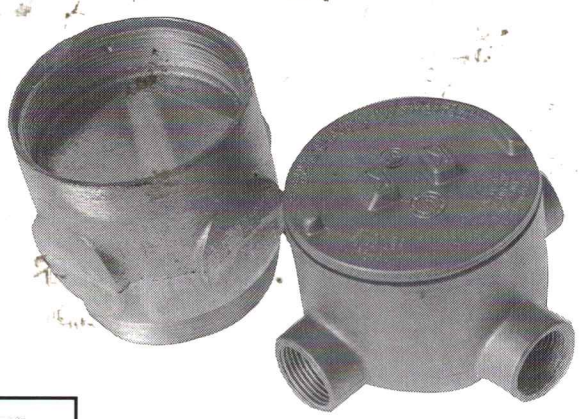
Explosion-proof fittings provide seals for housings located in Division 1, and Zones 0 and 1 hazardous areas. The fittings include sealing compound, packing fiber and the appropriate adapter.



Typical XY proximity probe mounting arrangement as viewed from the driver end

Transducer Accessories

Ordering Information



Junction Boxes

CATALOG NUMBER	DESCRIPTION	OVERALL HEIGHT	FITTING SIZE
03818016	Main body and blank cover	3.1 inches (79 mm)	3/4 inch NPT, 5 places
03818022	Extension (optional)	5.9 inches (150 mm) with body and cover	Not Applicable

CATALOG NUMBER	DIMENSIONS			
	CONDUIT SIZE	OVERALL DEPTH	WIDTH OF BODY	LENGTH OF BODY
03818065	1/2 inch NPT	1.1 inches (28 mm)	1.5 inches (38 mm)	3.75 inches (95 mm)
03818066	3/4 inch NPT	2.4 inches (61 mm)	1.75 inches (45 mm)	4.0 inches (102 mm)

Sealtite® Flexible Conduit

14847 1/2-inch assembly

14848 3/4-inch assembly

Option Description

□□ Length Option

Order in increments of 1 foot (300 mm).

Minimum length: 1 foot [0][1]

Maximum length: 99 feet [9][9]

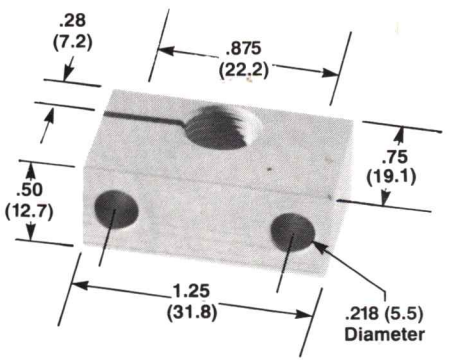
Aluminum Mounting Bracket

3567 - □□

Option Description

□□ Thread Size

0 1 3/8-24 UNF 2B
0 2 1/4-28 UNF 2B
0 3 M8 × 1 - 7A
0 4 M10 × 1 - 7A
0 5 5/16-24 UNF-2A



Phenolic Mounting Bracket

27474-01

Option Description

Has same dimensions as diagram but is only available with 3/8-24 UNF 2B threads. Used where extra electrical isolation is needed.

Transducer Accessories

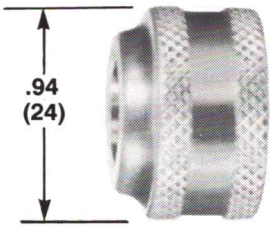
Cable Seal

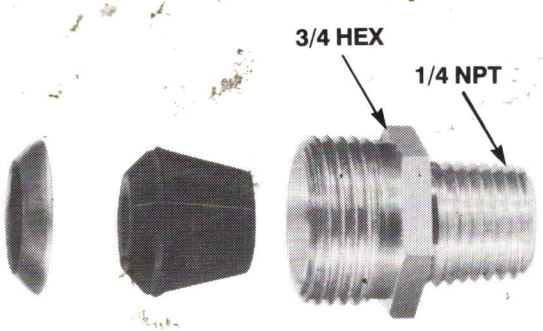
10076 - □□

Option Description

□□ Cable Size

01 50 ohm, without armor
02 75/95 ohm, without armor
03 75/95 ohm, with armor
04 50 ohm, with armor





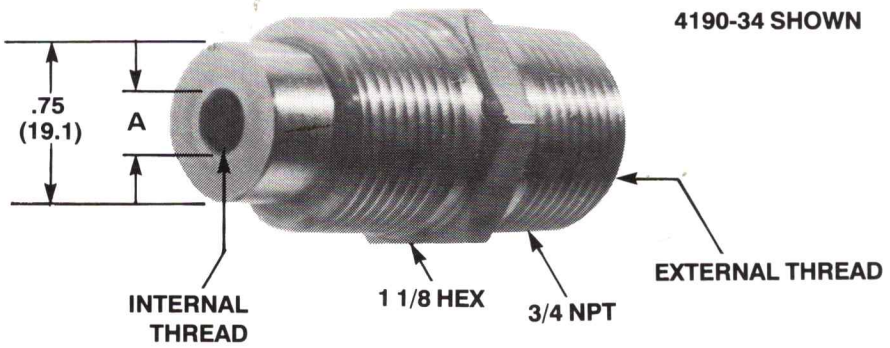
Overall length (assembled) 1.4 (35) under normal tightened condition

Adapter, 304 stainless steel

CATALOG NUMBER	DIMENSION A	INTERNAL THREAD	EXTERNAL THREAD	OVERALL LENGTH
4190-01	NA	1/4 NPT	1/2 NPT	1.5 inches (38.1 mm)
4190-06	.406 inch (10.3 mm)	3/8-24	1/2 NPT	1.5 inches (38.1 mm)
4190-34	.281 inch (7.1 mm)	1/4-28	3/4 NPT	2.2 inches (55.9 mm)
4190-36	.406 inch (10.3 mm)	1/4 NPT, 3/8-24	3/4 NPT	2.2 inches (55.9 mm)
4190-03	N/A	1/4 NPT	3/4 NPT	1.8 inches (45.7 mm)

Note: Dimensions in parentheses are in millimetres.

4190-34 SHOWN



Explosion-Proof Fittings

CATALOG NUMBER	CONDUIT SIZE	OVERALL LENGTH	QA WIDTH	MINIMUM TURN RADIUS
03818055	1/2	2-3/4	1-15/16	2-1/2
03818056	3/4	2-3/4	1-15/16	2-1/2
03818057	1	3-5/16	2-1/8	3-1/16
03818058	1-1/4	4	2-1/8	3-1/4

Transducer Accessories

Low Pressure Cable Seal

A B C
43501 - □□ - □□ - □□

Option Descriptions

A □□ High Pressure Side Thread Size

01 1/2-inch NPT

02 3/4-inch NPT

B □□ Cable Grommet and Washer

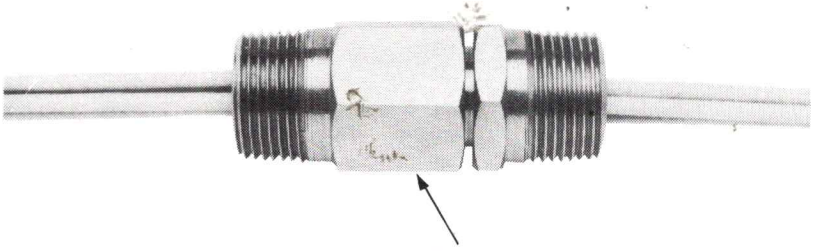
00 Solid grommet (no holes). Holes must be punched in grommet.

04 Grommet will accommodate up to 4 cables. One hole is punched and three are partially pre-drilled.

C □□ Low Pressure Side Thread Size

01 1/2-inch NPT

02 3/4-inch NPT



1.125 Inch Hex (28.6 mm)

ACCESSORIES

04490104 Punch tool kit for solid grommet option

43574-04 Replacement grommet for up to four cables

43575-04 Replacement washer

BULK CABLES

02173006 2 conductor, twisted, shielded 18 AWG (1.0 mm²)

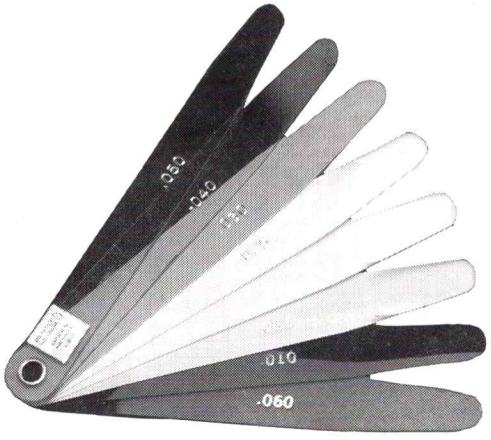
02173008 3 conductor, twisted, shielded 22 AWG (0.5 mm²)

02173009 3 conductor, twisted, shielded 18 AWG (1.0 mm²)

Two conductor cable is used with velocity transducers. Three conductor cable is used with Proximitor® and interface modules. Specify number of feet when ordering.

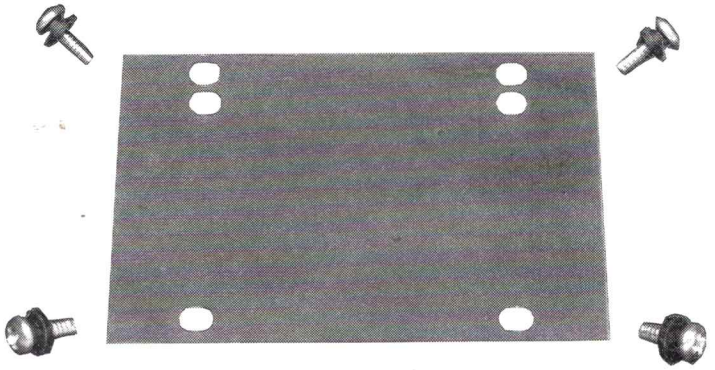
Feeler Gauge Set

Used for gapping proximity probes physically during probe installations. Order part number 19103-01.



7200 Proximitor® and Interface Module Isolator

Provides electrical isolation for the 7200 Proximitor®, velocity to displacement converters, and accelerometer interfaces modules. Order part number 19094-01.



© 1991 Bently Nevada Corporation